【Article】

Structure and Function of Dutch Study Groups As a Farm Service Establishment

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1. Introduction

Dutch horticulture has secured a firm position in Europe in spite of several difficulties after the war. As of 2010, the Dutch horticulture export volume became second in the world following U.S.A. Dutch horticulture has won a competitive battle with EU countries, including Spain and Italy, and also has overcome low-cost competition with emerging South African countries. The driver for this competing power (competition for quality and cost) is the growth and development of horticulture growers, and it has been the study groups that have greatly supported the growers. Study groups are autonomous organizations by growers. The study groups are internally providing-type farm service establishments where growers themselves produce services and provide those services to themselves. The characteristic of this establishment is similar to the farmers' group organization of Japan Agricultural Cooperatives (hereafter referred to as "group organizations").

Under the circumstances, where many small-and-medium-sized horticulture growers withdraw from business and large-sized ones enter it, the study groups are not as active as they were. However, it is possible to find their significance of today for the growers,

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or as the service establishments supporting them.

The purpose of this paper is to clarify the structure and function of the study groups as a farm service establishment through comparison with the group organizations in Japan, and discuss the significance of today's study groups contributing to the growth and development of growers.

We evaluated the study groups as a farm service establishment based upon the type of enterprise before conducting the under mentioned analysis[1]. It is possible to characteristically pinpoint that diverse farm service establishments are developed around Dutch horticulture (Isida, 1999). In particular, private service organizations based on profit seeking, such as consultancies, accounting offices, employment agencies, selling/processing companies for agricultural products, have been characteristically developed together with the development of horticulture. Meanwhile, although as public organizations become privatized public service establishments such as universities, agricultural experiment stations, institutions become weakened, they have been doing basic research concerning the development of production technology in a harmonious and cooperative way with private service establishments. Some cooperative service establishments have been developed, which are organized by the solidarity and mutual help of growers based upon operating expense self-sufficiency like producers' organization and cooperatives, but are different from the above private or public service establishments.

Accordingly, while versatile agricultural service establishments have been established and developed, the study groups organized by growers can be regarded as a financially self-sufficient cooperative service establishment. Regarding their service transactions, in particular, the study groups provide services within their organization. In other words, they have the characteristic of internally providing-type service establishments as well. In the same meaning, although the group organizations of Japan Agricultural Cooperatives also have a relationship with Japan Agricultural Cooperatives as a group, they are basically autonomous activity organizations for growers by growers (Kai, 1979; Takeuchi, 1980; and Kitagawa, 1993). They have the characteristic of internally providing-type service establishments the same as study groups (Miyabe, 2001).

The purpose of this paper is to approach the tasks by a comparative analysis of the study groups and group organizations, both having common characteristics as service establishments, using the framework of the theory of industrial organization. The tasks

are; 1) the market structure of service enterprise as organizations of growers (S), 2) the kinds of services for growers as a market conduct (C), and 3) the efficiency of internally providing services (or transaction of services) as market performance (P). In other words, it is the research from which these economic efficiencies can be obtained.

This paper will proceed with the discussion through the following procedures; first, to understand the demand of service by growers from the trends and characteristics of horticulture growers since 1990 (the 2nd section); second, to understand what organizations are conducting what activities through two case studies in the organization of study groups and their activities (the 3rd section); third, to clarify the structure of study groups as service establishments by the comparison with those of the group organizations in Japan based upon the case studies of the 3rd section (the 4th section), and finally, to discuss the significance of today's study groups as farm service establishments of horticulture growers and present remaining tasks for the future (the 5th section).

There have been only a few articles targeting the organizations of growers like study groups of the horticulture sector in the Netherlands. Although recently Bijman *et al.*, (2002, 2003) took up the issues of horticulture growers' organization, they discussed it not from the view point of farm service, but shipping, sales and marketing. Needless to say, the comparison with the cases of other countries including Japan has not been made. It is expected that the structure and function of Dutch study groups can be further clarified by comparison with those of Japanese group organizations.

2. Trends and Current Situations of Horticulture Growers

Dutch Agricultural production amount in 2009 was 22,465 million Euros, among which, horticultural production amount was 8,776 million Euros, accounting for 40% of the total amount. Therefore, its horticulture is a sector as important as livestock. Among the horticulture sector, 6,018 million Euros of cut flowers and pot plants (hereafter referred to as "flowers") and 1,695 million Euros of vegetables accounted for about 90% of the total horticultural production volume (LEI, 2010).

Table 1 shows the change of the number of growers of vegetables and flowers. Since 1990, the numbers of growers of both vegetables and flowers have decreased in all categories of greenhouse (under glass/indoor) and open field (outdoor) and others. In particular, the number of greenhouse vegetable growers, which was 4,222 in 1990,

Table 1 The Change of the Number of Growers of Vegetables and Cut flowers and Pot plants

Item \ Year		1990	1995	2000	2005	2006	2007	2008	2009	09/90
Vegetables	Greenhouse	4,222	3,612	2,644	1,958	1,843	1,708	1,570	1,463	0.35
	Open filed	2,503	2,006	1,459	1,081	1,123	1,053	1,038	977	0.39
	Others	520	346	239	174	169	147	140	120	0.23
Cut flowers and pot plants	Greenhouse	6,026	5,760	5,264	4,123	3,815	3,553	3,258	3,001	0.50
	Open filed	2,546	2,352	2,274	1,905	1,829	1,736	1,700	1,631	0.64
	Others	735	720	605	528	506	466	234	207	0.28

Sources : LEI (2008, 2010)

Table 2 The Greenhouse Vegetables Growers according to Planted Acreage

Year	Total (A)	Growers according to planted acreage				Planted acreage ha (B)	Planted acreage per grower ha (B/A)
		~0.5ha	0.5~1ha	1~2ha	2ha ~		
1990	5,652	2,286	1,744	1,292	330	4,453	0.79
1995	4,686	1,661	1,310	1,273	442	4,405	0.94
2000	3,433	1,098	822	914	599	4,201	1.22
2005	2,547	735	501	612	699	4,445	1.75
2006	2,400	683	456	572	689	4,548	1.90
2007	2,209	613	407	498	691	4,571	2.07
2008	2,022	547	362	417	696	4,647	2.44
2009	1,874	491	328	365	692	4,826	2.58

Sources : LEI (2008, 2010)

Note : Because the greenhouse vegetables growers include the multiple growers, the growers number of this table does not always equal with the growers number of table 1.

drastically decreased to 1,463, about 1/3 in 2009. The number of greenhouse flower growers, which was 6,026 in 1990, also deceased to 3,001 in 2009, about a half.

Although the number of horticulture growers has tended to greatly decrease, on the contrary, the planted acreage has tended to increase. Greenhouse vegetable planted acreage decreased from 4,453ha in 1990 to 4,201ha in 2000. However, since then it has increased and was 4,826ha in 2009 (Table 2). As a result, the average planted acreage per grower greatly increased from 79a in 1990 to 2.58ha in 2009 [2].

The scale expansion of greenhouse vegetable growing can be confirmed by the transition of the number of growers by planted acreage shown in Table 2. Although the drastic decrease in the number of greenhouse vegetable growers since 1990 is seen, it also reveals that it is due to the decrease in the growers planted acreage "less than 0.5ha" and "0.5-1ha". On the other hand, the number of growers planted acreage "2ha or more" greatly increased.

The table shows that the number of small-and-medium-sized growers is decreasing, and that of large-sized growers is increasing. In other words, it is considered that a shift

from small-and-medium sized family-operated horticulture to large-sized entrepreneurial style has been steadily advancing. It can also be pointed that the up sizing of Dutch horticulture management is advancing by the automatization and mechanization of facilities and the introduction of advanced technology intimately associated with these renovations.

The horticulture management since 1990 has tended to be large-sized in scale and facilities. It is obviously a way for horticulture growers to survive by assuming attaining economies of scale under the severe competition with EU countries and South American countries.

This is because recently inexpensive horticulture products are imported from Africa, Middle and Near East, Central and South America, in large amounts to the Netherlands, so cost reduction and scale expansion are required in horticulture management more than ever before. In addition, they are facing the tasks of new technical development and equipment investment such as the introduction of systems for the reduction of CO_2 emitted from greenhouse facilities and efforts for environment friendly agriculture such as insect pest control.

In this way, Dutch horticulture growers are furthermore pursuing the differentiation of their products by expanding their facilities and improving their operational performance. The horticulture growers require services concerning their strategic matters such as management growth and development rather than routine business activities. In other words, the demands for the farm services such as technology, know-how and information that the growers really require for the research and development and the improvement of production technology, are rising.

3. Organization and Activities of Study Groups

It is said that the study groups started at the turning point of Dutch horticulture from open field horticulture to greenhouse horticulture in the 1960s. This movement was triggered by a grower's call for the necessity for growers to find solutions by presenting their problems to each other for the establishment of the technology and know-how of greenhouse horticulture.

For this purpose, growers having the spirit of self-help and the same interests were organized based upon solidarity to develop techniques and know-how of greenhouse

horticulture aiming at the growth and development of their own horticulture management. The study groups are the organizations established by growers' autonomous and voluntary intention, so that the organizing of growers was not led by the initiative of outsiders, such as public organizations.

At present, approximately 60% of Dutch horticulture growers participate in study groups in some way [3]. The study groups are organized by the three product categories of greenhouse vegetables, open field vegetables and flowers. They are grouped by production item. For example, the greenhouse vegetables group is divided into the groups of the product items of tomatoes, cucumbers, paprika, lettuce, eggplant, zucchini, radishes, etc. Each group by product item consists of the horticulture growers producing the product item and various workshops concerning topics from the production to shipping to sales of the product item. In some cases, only growers participate in the workshop, while in other cases, some specialists also attend according to the subject.

Some groups by product item are further divided. For example, the tomato group is divided into fresh tomatoes, tomatoes on branch and mini tomatoes. This is because this grouping is made based upon autonomous and voluntary organizing efforts, so if the growers think it is necessary, further grouping is performed. There are groups by product category, each of which is organized with the representatives of the groups by product item in its center, and various commissions by each problem and task such as agricultural price, energy, development of production technology, have also been set up.

Although the study groups are independently managed because they are autonomously and voluntarily organized by growers, they are supported by LTO Groeiservice [4] for their research activities to be more promoted.

Then, specifically, what research activities are performed in the study groups. Table 3 shows the outlines and main purpose of activities of the fresh tomato group and pot plants group.

(1) Fresh Tomatoes Group

The fresh tomatoes group consists of five members who are business entrepreneurs developing large-scale facilities. All of them are concentrated in the Bleiswijk area. Some of the members are engaged in the production of items other than tomatoes, specifically paprika, and they join the paprika group, too. Basically, they may enter and leave the

Table 3 The Activities of Study Groups

<Name of group> (Product item group/Product category)	Fresh tomatoes (tomatoes/greenhouse vegetables)	Pot plants (pot plants/greenhouse flowers)
<Members of group>		
No. of members	·5 growers	·15 growers
Regional distribution of members	·Bleiswijk district	·Whole of Netherlands
Management type of members	·Entrepreneurial management	·Entrepreneurial management
<Opening status of workshops>		
No.of times of workshops (a year)	·About 48 times	·About 10 times
Frequency	·About once a week	·About once every 5 weeks
Open hours	·Around 15:00-	·Irregular
Venue	·Farms of each grower (hand down rule)	·Farms of each grower
W/ or w/o one-year program	·None	·Approximate annual program
Main activities	·Upgrading of tomato cultivation techniques ·Various information exchange and countermeasures for pests and disease-control, chemicals, mechanization and automatization, etc. ·Excursions	·Various information exchange and countermeasures concerning cultivation techniques ·Discussion on items assigned to LTO Groeiservice ·Excursions

Source: Field Survey (2007)

groups at their will. Group activities, such as research activities, excursion, are performed. All expenses for activities are paid by members and there is no system of payment such as an annual fee for activities.

Holding workshops is the most important event among the group activities. As the members are regionally concentrated, the workshops are opened at a frequency of about once a week (from 3:00 P.M., every Wednesday). Although the facilities of the members are used for the workshops on a hand down basis, the order is not always pre-determined. Rather, it is often the case that the members try to find improvement measures by seeing the facility of a member having problems in it. They are performing problem solving activities by discussing various problems in tomato cultivation. However, when they cannot solve a problem, they may assign the problem solution to the staff of LTO Groeiservice, the technology consultant with whom they have a contract or a supplier of seeds and plants, or may open a workshop inviting a specialist. Concerning the task of the development of new technology, in particular, group leaders make contact with the ad hoc committees consisting of representatives of the groups of other product items, and feedback the information obtained from them to the members of their groups.

(2) Pot Plants Group

The pot plants group consists of 15 members who are managing the business of pot plants. They are growing various flowers and common species are rather few. Group activities are performed mainly in the form of workshops which are held once every five weeks because the members are spread throughout the country of the Netherlands. The workshops are mainly opened in the facility of each member as in the case of the fresh tomato group. The main items to be studied at workshops are the improvement of cultivation techniques, various information exchanges and tasks to be assigned to LTO Groeiservice, and there are many cases of techniques and know-how concerning cultivation. In addition to these study activities, the leader of the potted plants group is also the contact with the person in charge of LTO Groeiservice and opens convivial meetings such as annual excursions.

As mentioned above, both groups periodically conduct group activities mainly in the form of workshops centering on production techniques. Although the frequency of holding workshops is different between the two groups, the workshops are held in the farms of growers and practical discussions are performed among them. The following common points can be extracted from the organizations and activities of the two groups:

The first common point: The study groups are growers' organizations based upon their cooperative spirit of self-help and solidarity. The self-help consciousness of the growers is strong and these growers organized by study group bring about management consciousness to solve various issues in rational ways. In this manner, this organization functions as a learning organization to enhance members' cost consciousness and management consciousness through interaction amongst them.

The second common point: The study groups are autonomously managed by growers. The management of the study group is all assigned to growers. There are no standardized rules for activity styles or methods. Their group activities are dependent upon the management of each study group. The members' freedom of entering and leaving the study group is guaranteed, and members are not fixated as a general rule. It is considered that the organization being built on loose solidarity is closely related to the autonomous management by growers.

The third common point: The study group is an organization open to both the inside and outside. New techniques and know-how are all positively opened up within the study

groups and in other ones, not kept secret privately or within the study groups. By doing this, the ability for technological development within the study groups can be enhanced and lead to further development of production techniques, etc. This becomes possible partly because of the system where the linkages among and between the groups and various committees of product category and product items, have been established.

4. Structure and Function of Study Groups

Table 4 shows the market structure (S), market conduct (C) and market performance (P) of study groups and group organizations as service establishments. First, relating to market structure, in order to focus on how the study groups and the group organizations are structured as service establishments, attention is paid to the status of combination and solidarity among members and the incentives of the members toward combination and solidarity. Second, relating to market conduct, the kinds and contents of internally providing services for growers are organized. Finally, relating to market performance, attention is paid to the economic significance that the efficiency of the transaction of services had, and the source of its economic efficiency. From table 4, the following can be pointed out concerning the structure and function of study groups.

First, regarding the market structure, the study groups were found to be a functional group organized by loose and horizontal combination and solidarity of the members. The members of group organizations in Japan were not guaranteed the freedom of entering and leaving it and they were fixated [5]. This is because the members were vertically organized due to members' exclusive and strong ties with the community, and the organizations had characteristics unique to the local communities in general meaning (Isida, 1987; Kitagawa, 1993). In other words, the incentive of the combination and solidarity of members in particular can be found in such characteristics as combination within region and hierarchical relationship by age. On the other hand, the members of study groups are guaranteed the freedom of entering and leaving groups, as they are not fixated in principle, and there is no geographical coverage or hierarchical relationship among the members. In other words, the organizations also have the loose solidarity, and they have strong characteristics of functional groups where the members perform the development and improvement of producing technology by themselves. This is to say, these functionalities concerning these services greatly work on the incentive of the

Table 4 Structure and Function of Study Groups and Group Organizations as Service Establishments

	Study Groups	Group Organizations
Market structure (S)		
Combination and solidarity of members	·Horizontal and loose combination and solidarity	·Vertical and rigid combination and solidarity
Incentive toward combination and solidarity of members	(Freedom of entering and leaving) ·Functionality	(No freedom of entering and leaving) ·Regionality
Market conduct (C)		
Kinds of service	·Services concerning strategic work (Development and improvement of producing technology, development and improvement of production materials and factors of production)	·Services concerning routine work (Labor work of selection and packing, administrative work of sales, etc.)
Main phases of internally provided services	·Previous phase of production, phase of production	·Phase of production, phase of sales
Market performance (P)		
Efficiency of internal provision of services (transaction) and economic efficiency working there	·Economies of combination (Combination of shared resources, mutual exploitation)	·Economies of scale (Effective use of fixed factors of production in production and sales)

members toward loose and horizontal combination and solidarity.

Then, regarding market behavior, the study groups are internally providing the services with contents concerning strategic matters for growers. Meanwhile, the group organizations are mainly internally providing the kinds of services with contents concerning routine work necessary for the maintenance and continuance of growers' management at the phases of production and sales such as labor work of selection, packing and administrative work of sales and market analysis. On the other hand, the study groups are internally providing the kinds of services with contents concerning the growth and development of growers' management at the previous stage before production and at the stage of production such as development and improvement of producing technology and development and improvement of production materials and factors of production. In other words, they are providing the kinds of services with contents concerning strategic work.

Furthermore, regarding market performance, the efficiency of internal provision of services (transaction) like the above rests on the combination and mutual exploitation of shared resources by the members. Meanwhile, in the case of group organizations, the internal provision of services rests on the effective use of fixed factors of production at the phases of production and sales or economies of scale. The group organizations are pursuing economies of scale by homogeneous small-sized farmers producing the same

products in a certain area by reducing fixed costs based on saving spaces and facilities such as cooperative working floors for selection and packing. In contrast, the internal provision of services by study groups was the accumulation and use of information resources including information exchange with stake holders surrounding the study groups, and the source of the efficiency of internal provision of services (transaction) can be obtained in the economic efficiency by the creation of shared resources based on the cooperative relationship among the members, or the economic efficiency by network or combination [6]. Accordingly, the internal provision of services concerning strategic work means the effective use of information resources. The study groups have the organizational structure appropriate for effective accumulation and use of information resources, that is to say, it assumes a characteristic as a functional group with loose and horizontal combination and solidarity, and it is an important point that they have also the market structure opened to both the inside and outside.

5. Conclusion

Dutch horticulture growers are struggling for expanding scale under the severe market competition for survival. They are facing the rising needs of farm services for strategic work concerning the growth and development of management. The study groups are evaluated as an internally service providing establishment which are cooperative and relatively highly-compatible to these farm services.

Certainly, the scale expansion of horticulture growers is advancing and the number of horticulture growers composing the groups is drastically decreasing. However, the demand for farm services concerning strategic work really needed by horticulture growers, or specifically, the demand for the development of producing technology and improvement of cultivation methods, is increasing more and more. The fact that the study groups have the function of internally providing the services concerning strategic work within the groups shows today's significance of the importance for the growth and development of horticulture management.

This paper tried to clarify the structure and function of Dutch study groups through comparative analysis with farmers of group organizations in Japan, which have the characteristics as farm service establishment similar to the study groups. The study groups have not been highlighted in the Netherlands. It is very difficult to find studies

concerning the organization of growers in the Netherlands. There is no existent research regarding study groups. It is necessary to accumulate empirical analyses for the growers participating in study groups. Along with the recent drastic decrease in the number of horticulture growers, the service establishments, which are the service supply side, have greatly changed, and the positioning of the study groups among the farm service establishments is also changing. Empirical research concerning the trends of the supply side of farm services and the relationship between horticulture growers and farm service establishments should be further explored.

Notes:

1) The classification of agricultural service establishments based upon corporate morphology was referred to Miyabe (1998).

2) This scale is as large as 10 times the average planted acreage per grower in Japan.

3) By oral surveys were conducted for persons concerned.

4) LTO Groeiservice is a subordinate organization of LTO (The Dutch confederation of Agriculture and horticulture), and to provide information on production technology and policy, or to do consulting for study groups and growers(http://www.groeiservice.nl/).

5) The structure and function of group organizations of Japan Agricultural Cooperatives were referred to Isida (1987), Kitaqawa (1993), Miyabe (2004), etc.

6) Economies of combination were referred to Miyazawa (1988) and Iba (2005).

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